

Memorandum

To: Don Jones Jr., PacifiCorp/Rocky Mountain Power
From: David Basak, Navigant
Date: June 26, 2014
Re: Program Design Cost Effectiveness for the Utah Home Energy Savers Program

Navigant has developed this memo in response to PacifiCorp’s proposed Home Energy Savers Program cost effectiveness modeling needs in the state of Utah.

This memo presents the cost effectiveness results of individual analysis runs and a compilation of combined years for the state of Utah. Each scenario is analyzed using a high (+10%), expected, and low (-10%) participation with modeled assumptions provided by PacifiCorp. These scenarios utilize the following assumptions:

- ***Avoided Costs:*** Navigant utilized the “East” decrement value stream provided in the 2013 PacifiCorp Integrated Resource Plan. PacifiCorp identified measure types (i.e., cooling, lighting, and whole house) which were used to determine the appropriate decrement stream and load shape when calculating avoided costs. The measures types are as follows:
 - › *Cooling Measures* – East Cooling Decrement and load shape
 - › *Lighting Measures* – East Lighting Decrement and load shape
 - › *Whole House Measures* – East Whole House Decrement and load shape
 - › *Plug Loads Measures* – East Plug Load Decrement and load shape
 - › *Water Heating Measures* – East Water Heating Decrement and load shape
- ***Modeling Inputs:*** Navigant utilized individual measure savings and administration costs provided by PacifiCorp in the file *UT HES State Savings Summary_2014_6-17-14_Final.xlsx*.
- ***Energy Rates:*** Navigant utilized the 2013 rates provided by PacifiCorp and applied an escalation of 1.9% to arrive at estimated rates for PY2014 through PY2016.
- ***Participation Variations:*** Navigant provides three levels of participation; high (+10%), expected, and low (-10%).

This memo will begin by addressing the total results for PY2014-2016 for the Utah Home Energy Savers Program. The cost-effectiveness inputs are as follows:

Table 1 –Cost Effectiveness Analysis Inputs

Parameters	2014	2015	2016
Discount Rate for all B/C Tests	6.88%	6.88%	6.88%
Line Loss Factor - Energy (%)	9.32%	9.32%	9.32%
Residential Energy Rate (\$/kWh)	\$0.108	\$0.110	\$0.112
Net-to-Gross Ratio	Varies	Varies	Varies
Escalation Rate	1.9%	1.9%	1.9%

Table 2 –Annual Program Costs for PY 2014-2016 (Source: PacifiCorp)

Scenario	Program Admin (\$)	Internal Admin (\$)
Program Year 2014	\$4,952,449	\$225,000
Program Year 2015	\$4,886,085	\$510,000
Program Year 2016	\$4,773,931	\$260,000
Total PY 2014-2016	\$14,612,465	\$995,000

Table 3 –Annual Program Incentives for PY 2014-2016 (Source: PacifiCorp)

Scenario	High Participation (+10%)	Expected Participation	Low Participation (-10%)
	Incentives (\$)	Incentives (\$)	Incentives (\$)
Program Year 2014	\$19,569,661	\$17,790,601	\$16,011,541
Program Year 2015	\$20,076,204	\$18,251,095	\$16,425,985
Program Year 2016	\$21,941,370	\$19,946,700	\$17,952,030
Total PY 2014-2016	\$61,587,235	\$55,988,396	\$50,389,556

Table 4 –Annual Program Savings at Site for PY 2014-2016 in kWh (Source: PacifiCorp)

Scenario	High Participation (+10%)		Expected Participation		Low Participation (-10%)	
	Gross Annual Energy Savings at Site (kWh)	Net Annual Energy Savings at Site (kWh)	Gross Annual Energy Savings at Site (kWh)	Net Annual Energy Savings at Site (kWh)	Gross Annual Energy Savings at Site (kWh)	Net Annual Energy Savings at Site (kWh)
Program Year 2014	113,384,059	84,454,317	103,076,417	76,776,652	92,768,775	69,098,987
Program Year 2015	122,158,815	90,989,182	111,053,468	82,717,438	99,948,121	74,445,694
Program Year 2016	131,243,931	97,605,330	119,312,664	88,732,118	107,381,398	79,858,907
Total PY 2014-2016	366,786,805	273,048,829	333,442,550	248,226,209	300,098,295	223,403,588

The PY2014 cost/benefits results for ALL sensitivities are as follows:

Table 5 –PY 2014 Cost/Benefit Test Results – High (+10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0758	\$49,312,720	\$67,713,678	\$18,400,958	1.37
Total Resource Cost Test (TRC) No Adder	\$0.0758	\$49,312,720	\$61,557,889	\$12,245,169	1.25
Utility Cost Test (UCT)	\$0.0381	\$24,747,110	\$61,557,889	\$36,810,779	2.49
Rate Impact Test (RIM)		\$99,938,741	\$61,557,889	(\$38,380,852)	0.62
Participant Cost Test (PCT)		\$44,135,271	\$118,706,317	\$74,571,046	2.69
Lifecycle Revenue Impacts (\$/kWh)				\$0.000060298	
Discounted Participant Payback (years)				n/a	

Table 6 –PY 2014 Cost/Benefit Test Results – Expected Participation

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0766	\$45,300,423	\$61,557,889	\$16,257,466	1.36
Total Resource Cost Test (TRC) No Adder	\$0.0766	\$45,300,423	\$55,961,717	\$10,661,294	1.24
Utility Cost Test (UCT)	\$0.0389	\$22,968,050	\$55,961,717	\$32,993,667	2.44
Rate Impact Test (RIM)		\$91,324,079	\$55,961,717	(\$35,362,361)	0.61
Participant Cost Test (PCT)		\$40,122,974	\$107,914,833	\$67,791,860	2.69
Lifecycle Revenue Impacts (\$/kWh)				\$0.000055556	
Discounted Participant Payback (years)				n/a	

Table 7 –PY 2014 Cost/Benefit Test Results – Low (-10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0776	\$41,288,126	\$55,402,100	\$14,113,975	1.34
Total Resource Cost Test (TRC) No Adder	\$0.0776	\$41,288,126	\$50,365,546	\$9,077,420	1.22
Utility Cost Test (UCT)	\$0.0398	\$21,188,990	\$50,365,546	\$29,176,556	2.38
Rate Impact Test (RIM)		\$82,709,416	\$50,365,546	(\$32,343,870)	0.61
Participant Cost Test (PCT)		\$36,110,677	\$97,123,350	\$61,012,674	2.69
Lifecycle Revenue Impacts (\$/kWh)				\$0.000050814	
Discounted Participant Payback (years)				n/a	

The PY2015 cost/benefits results for ALL sensitivities are as follows:

Table 8 –PY 2015 Cost/Benefit Test Results – High (+10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0786	\$54,054,195	\$72,537,553	\$18,483,358	1.34
Total Resource Cost Test (TRC) No Adder	\$0.0786	\$54,054,195	\$65,943,230	\$11,889,035	1.22
Utility Cost Test (UCT)	\$0.0371	\$25,472,289	\$65,943,230	\$40,470,941	2.59
Rate Impact Test (RIM)		\$106,483,522	\$65,943,230	(\$40,540,292)	0.62
Participant Cost Test (PCT)		\$48,658,110	\$126,773,276	\$78,115,166	2.61
Lifecycle Revenue Impacts (\$/kWh)				\$0.000062390	
Discounted Participant Payback (years)				n/a	

Table 9 –PY 2015 Cost/Benefit Test Results – Expected Participation

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0794	\$49,630,731	\$65,943,230	\$16,312,499	1.33
Total Resource Cost Test (TRC) No Adder	\$0.0794	\$49,630,731	\$59,948,391	\$10,317,660	1.21
Utility Cost Test (UCT)	\$0.0378	\$23,647,180	\$59,948,391	\$36,301,212	2.54
Rate Impact Test (RIM)		\$97,293,755	\$59,948,391	(\$37,345,364)	0.62
Participant Cost Test (PCT)		\$44,234,646	\$115,248,433	\$71,013,787	2.61
Lifecycle Revenue Impacts (\$/kWh)				\$0.000057473	
Discounted Participant Payback (years)				n/a	

Table 10 –PY 2015 Cost/Benefit Test Results – Low (-10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0804	\$45,207,266	\$59,348,907	\$14,141,641	1.31
Total Resource Cost Test (TRC) No Adder	\$0.0804	\$45,207,266	\$53,953,552	\$8,746,286	1.19
Utility Cost Test (UCT)	\$0.0388	\$21,822,070	\$53,953,552	\$32,131,482	2.47
Rate Impact Test (RIM)		\$88,103,988	\$53,953,552	(\$34,150,436)	0.61
Participant Cost Test (PCT)		\$39,811,181	\$103,723,589	\$63,912,408	2.61
Lifecycle Revenue Impacts (\$/kWh)				\$0.000052556	
Discounted Participant Payback (years)				n/a	

The PY2016 cost/benefits results for ALL sensitivities are as follows:

Table 11 –PY 2016 Cost/Benefit Test Results – High (+10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0795	\$58,617,195	\$78,279,023	\$19,661,828	1.34
Total Resource Cost Test (TRC) No Adder	\$0.0795	\$58,617,195	\$71,162,748	\$12,545,553	1.21
Utility Cost Test (UCT)	\$0.0366	\$26,975,301	\$71,162,748	\$44,187,446	2.64
Rate Impact Test (RIM)		\$115,568,670	\$71,162,748	(\$44,405,923)	0.62
Participant Cost Test (PCT)		\$53,583,264	\$138,760,589	\$85,177,325	2.59
Lifecycle Revenue Impacts (\$/kWh)				\$0.000066980	
Discounted Participant Payback (years)				n/a	

Table 12 –PY 2016 Cost/Benefit Test Results – Expected Participation

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0801	\$53,745,989	\$71,162,748	\$17,416,759	1.32
Total Resource Cost Test (TRC) No Adder	\$0.0801	\$53,745,989	\$64,693,407	\$10,947,418	1.20
Utility Cost Test (UCT)	\$0.0372	\$24,980,631	\$64,693,407	\$39,712,776	2.59
Rate Impact Test (RIM)		\$105,520,058	\$64,693,407	(\$40,826,651)	0.61
Participant Cost Test (PCT)		\$48,712,058	\$126,145,990	\$77,433,932	2.59
Lifecycle Revenue Impacts (\$/kWh)				\$0.000061581	
Discounted Participant Payback (years)				n/a	

Table 13 –PY 2016 Cost/Benefit Test Results – Low (-10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0810	\$48,874,783	\$64,046,473	\$15,171,690	1.31
Total Resource Cost Test (TRC) No Adder	\$0.0810	\$48,874,783	\$58,224,066	\$9,349,283	1.19
Utility Cost Test (UCT)	\$0.0381	\$22,985,961	\$58,224,066	\$35,238,105	2.53
Rate Impact Test (RIM)		\$95,471,445	\$58,224,066	(\$37,247,379)	0.61
Participant Cost Test (PCT)		\$43,840,852	\$113,531,391	\$69,690,539	2.59
Lifecycle Revenue Impacts (\$/kWh)				\$0.000056182	
Discounted Participant Payback (years)				n/a	

The PY2014-2016 cost/benefits results for ALL sensitivities are as follows:

Table 14 –PY2014-2016 Cost/Benefit Test Results – High (+10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0781	\$161,984,110	\$218,530,254	\$56,546,143	1.35
Total Resource Cost Test (TRC) No Adder	\$0.0781	\$161,984,110	\$198,663,867	\$36,679,756	1.23
Utility Cost Test (UCT)	\$0.0372	\$77,194,700	\$198,663,867	\$121,469,167	2.57
Rate Impact Test (RIM)		\$321,990,934	\$198,663,867	(\$123,327,067)	0.62
Participant Cost Test (PCT)		\$146,376,645	\$384,240,182	\$237,863,536	2.63
Lifecycle Revenue Impacts (\$/kWh)				\$0.000063268	
Discounted Participant Payback (years)				n/a	

Table 15 –PY2014-2016 Cost/Benefit Test Results – Expected Participation

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0788	\$148,677,143	\$198,663,867	\$49,986,724	1.34
Total Resource Cost Test (TRC) No Adder	\$0.0788	\$148,677,143	\$180,603,515	\$31,926,373	1.21
Utility Cost Test (UCT)	\$0.0379	\$71,595,861	\$180,603,515	\$109,007,655	2.52
Rate Impact Test (RIM)		\$294,137,891	\$180,603,515	(\$113,534,376)	0.61
Participant Cost Test (PCT)		\$133,069,678	\$349,309,256	\$216,239,578	2.63
Lifecycle Revenue Impacts (\$/kWh)				\$0.000058244	
Discounted Participant Payback (years)				n/a	

Table 16 –PY2014-2016 Cost/Benefit Test Results – Low (-10% Participation)

Benefit/Cost Test Performed	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conversation Adder	\$0.0797	\$135,370,175	\$178,797,480	\$43,427,305	1.32
Total Resource Cost Test (TRC) No Adder	\$0.0797	\$135,370,175	\$162,543,164	\$27,172,989	1.20
Utility Cost Test (UCT)	\$0.0389	\$65,997,021	\$162,543,164	\$96,546,143	2.46
Rate Impact Test (RIM)		\$266,284,849	\$162,543,164	(\$103,741,685)	0.61
Participant Cost Test (PCT)		\$119,762,710	\$314,378,330	\$194,615,620	2.63
Lifecycle Revenue Impacts (\$/kWh)				\$0.000053220	
Discounted Participant Payback (years)				n/a	

The measure level cost/benefits results are as follows:

Table 17 – Single Family Cost/Benefit Test Results – Appliances/Misc. (ALL Sensitivities)

Utah HES Program Measure Level - Appliances/Misc	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
Clothes Washers - 2.2-2.59	Retiring	Average	\$61.82	\$119.00	0.5	\$56.20	\$119.00	0.5	\$56.20	\$35.00	1.6	\$56.20	\$109.19	0.5	\$109.19	\$119.00	0.9
2.2 -2.59: Electric DHW & Electric Dryer	Retiring	Breakdown	\$133.75	\$119.00	1.1	\$121.59	\$119.00	1.0	\$121.59	\$35.00	3.5	\$121.59	\$195.52	0.6	\$195.52	\$119.00	1.6
2.2 -2.59: Electric DHW & Gas Dryer	Retiring	Breakdown	\$65.71	\$119.00	0.6	\$59.73	\$119.00	0.5	\$59.73	\$35.00	1.7	\$59.73	\$113.86	0.5	\$113.86	\$119.00	1.0
2.2-2.59: Gas DHW & Electric Dryer	Retiring	Breakdown	\$69.75	\$119.00	0.6	\$63.41	\$119.00	0.5	\$63.41	\$35.00	1.8	\$63.41	\$118.71	0.5	\$118.71	\$119.00	1.0
2.2 -2.59: Gas DHW & Gas Dryer	Retiring	Breakdown	\$1.42	\$119.00	0.0	\$1.29	\$119.00	0.0	\$1.29	\$35.00	0.0	\$1.29	\$36.71	0.0	\$36.71	\$119.00	0.3
Clothes Washers - 2.6+	Retiring	Average	\$107.00	\$209.00	0.5	\$97.27	\$209.00	0.5	\$97.27	\$50.00	1.9	\$97.27	\$178.42	0.5	\$178.42	\$209.00	0.9
2.6 MEF: Electric DHW & Electric Dryer	Retiring	Breakdown	\$214.95	\$209.00	1.0	\$195.41	\$209.00	0.9	\$195.41	\$50.00	3.9	\$195.41	\$307.98	0.6	\$307.98	\$209.00	1.5
2.6 MEF: Electric DHW & Gas Dryer	Retiring	Breakdown	\$96.49	\$209.00	0.5	\$87.72	\$209.00	0.4	\$87.72	\$50.00	1.8	\$87.72	\$165.80	0.5	\$165.80	\$209.00	0.8
2.6 MEF: Gas DHW & Electric Dryer	Retiring	Breakdown	\$122.28	\$209.00	0.6	\$111.16	\$209.00	0.5	\$111.16	\$50.00	2.2	\$111.16	\$196.76	0.6	\$196.76	\$209.00	0.9
2.6 MEF: Gas DHW & Gas Dryer	Retiring	Breakdown	\$4.01	\$209.00	0.0	\$3.65	\$209.00	0.0	\$3.65	\$50.00	0.1	\$3.65	\$54.82	0.1	\$54.82	\$209.00	0.3
Dishwasher	Retiring	Average	\$22.72	\$53.46	0.4	\$20.66	\$53.46	0.4	\$20.66	\$20.00	1.0	\$20.66	\$51.08	0.4	\$67.08	\$53.46	1.3
CEE Tier 1 (.75 EF) Electric DHW	Retiring	Breakdown	\$17.82	\$53.46	0.3	\$16.20	\$53.46	0.3	\$16.20	\$20.00	0.8	\$16.20	\$44.37	0.4	\$56.93	\$53.46	1.1
CEE Tier 1 (.75 EF) Gas DHW	Retiring	Breakdown	\$23.27	\$53.46	0.4	\$21.15	\$53.46	0.4	\$21.15	\$20.00	1.1	\$21.15	\$51.82	0.4	\$68.21	\$53.46	1.3
CAC Tune-Up	Retiring	Average	\$49.40	\$200.25	0.2	\$44.91	\$200.25	0.2	\$44.91	\$20.00	2.2	\$44.91	\$47.36	0.9	\$50.74	\$200.25	0.3
Heat Pump Tune-Up	Retiring	Average	\$428.58	\$200.25	2.1	\$389.61	\$200.25	1.9	\$389.61	\$175.00	2.2	\$389.61	\$412.38	0.9	\$441.72	\$200.25	2.2
Refrigerator	Retiring	Average	\$104.43	\$76.95	1.4	\$94.94	\$76.95	1.2	\$94.94	\$40.00	2.4	\$94.94	\$164.11	0.6	\$164.11	\$76.95	2.1
Insulation "Spiff"	Retiring	Average	\$0.00	\$0.00	NA	\$0.00	\$0.00	NA	\$0.00	\$100.00	NA	\$0.00	\$100.00	NA	\$100.00	\$0.00	NA
Electric Water Heater	Retiring	Average	\$86.04	\$33.00	2.6	\$78.22	\$33.00	2.4	\$78.22	\$50.00	1.6	\$78.22	\$164.31	0.5	\$223.20	\$33.00	6.8
EWB - 25 to 34.9 gallon capacity	Retiring	Breakdown	\$35.25	\$19.12	1.8	\$32.05	\$19.12	1.7	\$32.05	\$50.00	0.6	\$32.05	\$96.84	0.3	\$120.96	\$19.12	6.3
EWB - 35 to 44.9 gallon capacity	Retiring	Breakdown	\$65.73	\$35.48	1.9	\$59.75	\$35.48	1.7	\$59.75	\$50.00	1.2	\$59.75	\$137.32	0.4	\$182.31	\$35.48	5.1
EWB - 45 to 54.9 gallon capacity	Retiring	Breakdown	\$89.03	\$47.94	1.9	\$80.94	\$47.94	1.7	\$80.94	\$50.00	1.6	\$80.94	\$168.28	0.5	\$229.21	\$47.94	4.8
EWB - 55 to 74.9 gallon capacity	Retiring	Breakdown	\$113.53	\$60.45	1.9	\$103.21	\$60.45	1.7	\$103.21	\$50.00	2.1	\$103.21	\$200.83	0.5	\$278.53	\$60.45	4.6
EWB - 75 to 99.9 gallon capacity	Retiring	Breakdown	\$77.08	\$39.58	1.9	\$70.07	\$39.58	1.8	\$70.07	\$50.00	1.4	\$70.07	\$152.40	0.5	\$205.16	\$39.58	5.2
EWB - 100 to 120.0 gallon capacity	Retiring	Breakdown	\$71.70	\$32.30	2.2	\$65.19	\$32.30	2.0	\$65.19	\$50.00	1.3	\$65.19	\$145.26	0.4	\$194.33	\$32.30	6.0
Clothes Washers - 3.2 MEF or Higher	Revised	Average	\$80.71	\$155.10	0.5	\$73.37	\$155.10	0.5	\$73.37	\$50.00	1.5	\$73.37	\$146.86	0.5	\$196.76	\$155.10	1.3
Clothes Washers - 3.2 MEF or Higher: Electric DHW & Electric Dryer	Revised	Breakdown	\$143.13	\$155.10	0.9	\$130.11	\$155.10	0.8	\$130.11	\$50.00	2.6	\$130.11	\$221.78	0.6	\$310.27	\$155.10	2.0
Clothes Washers - 3.2 MEF or Higher: Electric DHW & Gas Dryer	Revised	Breakdown	\$58.96	\$155.10	0.4	\$53.60	\$155.10	0.3	\$53.60	\$50.00	1.1	\$53.60	\$120.76	0.4	\$157.22	\$155.10	1.0
Clothes Washers - 3.2 MEF or Higher: Gas DHW & Electric Dryer	Revised	Breakdown	\$93.95	\$155.10	0.6	\$85.41	\$155.10	0.6	\$85.41	\$50.00	1.7	\$85.41	\$162.75	0.5	\$220.84	\$155.10	1.4
Clothes Washers - 3.2 MEF or Higher: Gas DHW & Gas Dryer	Revised	Breakdown	\$10.29	\$155.10	0.1	\$9.35	\$155.10	0.1	\$9.35	\$50.00	0.2	\$9.35	\$62.35	0.2	\$68.71	\$155.10	0.4
Clothes Washer Recycling	Current	Average	\$26.07	\$0.00	NA	\$23.70	\$0.00	NA	\$23.70	\$25.00	0.9	\$23.70	\$63.37	0.4	\$90.03	\$0.00	NA
Refrigerator (CEE Tier 3) Any Style	Revised	Average	\$128.25	\$50.55	2.5	\$116.59	\$50.55	2.3	\$116.59	\$100.00	1.2	\$116.59	\$254.46	0.5	\$334.04	\$50.55	6.6
Room AC	Revised	Average	\$123.26	\$44.50	2.8	\$112.05	\$44.50	2.5	\$112.05	\$20.00	5.6	\$112.05	\$87.40	1.3	\$95.73	\$44.50	2.2
Evaporative Cooling - Portable	Revised	Average	\$904.84	\$130.50	6.9	\$822.59	\$130.50	6.3	\$822.59	\$200.00	4.1	\$822.59	\$694.77	1.2	\$859.69	\$130.50	6.6
ENERGY STAR Freezers	Revised	Average	\$56.86	\$17.66	3.2	\$51.69	\$17.66	2.9	\$51.69	\$50.00	1.0	\$51.69	\$117.16	0.4	\$151.76	\$17.66	8.6
CFL Fixture	Revised	Average	\$22.03	\$10.98	2.0	\$20.03	\$10.98	1.8	\$20.03	\$10.00	2.0	\$20.03	\$38.33	0.5	\$48.80	\$10.98	4.4
LED Fixture	Revised	Average	\$23.64	\$10.98	2.2	\$21.50	\$10.98	2.0	\$21.50	\$10.00	2.1	\$21.50	\$40.40	0.5	\$51.64	\$10.98	4.7
Heat Pump Water Heaters Tier 1	Revised	Average	\$985.02	\$986.93	1.0	\$895.47	\$986.93	0.9	\$895.47	\$2,108.63	1.1	\$895.47	\$2,108.63	0.4	\$2,108.63	\$986.93	2.1
Heat Pump Water Heaters Tier 1: 50 to 75 gallons - Any Heat Type - Unheated Buffer Lo	Revised	Breakdown	\$803.05	\$899.86	0.9	\$730.04	\$899.86	0.8	\$730.04	\$800.00	0.9	\$730.04	\$1,866.87	0.4	\$1,866.87	\$899.86	2.1
Heat Pump Water Heaters Tier 1: 50 to 75 gallons - Gas Heated Home - Interior Location	Revised	Breakdown	\$1,400.58	\$945.44	1.5	\$1,273.25	\$945.44	1.3	\$1,273.25	\$800.00	1.6	\$1,273.25	\$2,660.70	0.5	\$2,660.70	\$945.44	2.8
Heat Pump Water Heaters Tier 1: 50 to 75 gallons - Heat Pump Heated Home - Interior Location	Revised	Breakdown	\$1,076.46	\$945.44	1.1	\$978.60	\$945.44	1.0	\$978.60	\$800.00	1.2	\$978.60	\$2,230.11	0.4	\$2,230.11	\$945.44	2.4
Heat Pump Water Heaters Tier 1: 50 to 75 gallons - Zonal Electric Heated Home - Interior Location	Revised	Breakdown	\$586.67	\$945.44	0.6	\$533.33	\$945.44	0.6	\$533.33	\$800.00	0.7	\$533.33	\$1,579.40	0.3	\$1,579.40	\$945.44	1.7
Heat Pump Water Heaters Tier 1: 50 to 75 gallons - Electric Furnace Heated Home - Interior Location	Revised	Breakdown	\$503.37	\$945.44	0.5	\$457.61	\$945.44	0.5	\$457.61	\$800.00	0.6	\$457.61	\$1,468.75	0.3	\$1,468.75	\$945.44	1.6
Heat Pump Water Heaters Tier 1: greater than 75 gallons - Any Heat Type - Unheated Buffer Location	Revised	Breakdown	\$1,645.02	\$1,434.74	1.1	\$1,495.47	\$1,434.74	1.0	\$1,495.47	\$800.00	1.9	\$1,495.47	\$2,985.46	0.5	\$2,985.46	\$1,434.74	2.1
Heat Pump Water Heaters Tier 1: greater than 75 gallons - Gas Heated Home - Interior Location	Revised	Breakdown	\$1,963.71	\$1,480.33	1.3	\$1,785.19	\$1,480.33	1.2	\$1,785.19	\$800.00	2.2	\$1,785.19	\$3,408.84	0.5	\$3,408.84	\$1,480.33	2.3
Heat Pump Water Heaters Tier 1: greater than 75 gallons - Heat Pump Heated Home - Interior Location	Revised	Breakdown	\$1,526.42	\$1,480.33	1.0	\$1,387.66	\$1,480.33	0.9	\$1,387.66	\$800.00	1.7	\$1,387.66	\$2,827.89	0.5	\$2,827.89	\$1,480.33	1.9
Heat Pump Water Heaters Tier 1: greater than 75 gallons - Zonal Electric Heated Home - Interior Location	Revised	Breakdown	\$866.42	\$1,480.33	0.6	\$787.65	\$1,480.33	0.5	\$787.65	\$800.00	1.0	\$787.65	\$1,951.06	0.4	\$1,951.06	\$1,480.33	1.3
Heat Pump Water Heaters Tier 1: greater than 75 gallons - Electric Furnace Heated Home - Interior Location	Revised	Breakdown	\$754.16	\$1,480.33	0.5	\$685.60	\$1,480.33	0.5	\$685.60	\$800.00	0.9	\$685.60	\$1,801.92	0.4	\$1,801.92	\$1,480.33	1.2
Heat Pump Water Heaters Tier 2	Revised	Average	\$1,590.70	\$1,405.90	1.1	\$1,446.09	\$1,405.90	1.0	\$1,446.09	\$800.00	1.8	\$1,446.09	\$2,913.29	0.5	\$2,913.29	\$1,405.90	2.1
Heat Pump Water Heaters Tier 2: Heat Pump Water Heaters Tier 2any tank size >= 50 gallons	Revised	Breakdown	\$1,624.20	\$1,369.00	1.2	\$1,476.54	\$1,369.00	1.1	\$1,476.54	\$800.00	1.8	\$1,476.54	\$2,957.79	0.5	\$2,957.79	\$1,369.00	2.2
Heat Pump Water Heaters Tier 2: any tank size >= 50 gallons - Gas Heated Home - Exhaust Location	Revised	Breakdown	\$1,560.82	\$1,615.00	1.0	\$1,418.93	\$1,615.00	0.9	\$1,418.93	\$800.00	1.8	\$1,418.93	\$2,873.60	0.5	\$2,873.60	\$1,615.00	1.8
Heat Pump Water Heaters Tier 2: any tank size >= 50 gallons - Heat Pump Heated Home - Interior Location	Revised	Breakdown	\$1,125.35	\$1,615.00	0.7	\$1,023.05	\$1,615.00	0.6	\$1,023.05	\$800.00	1.3	\$1,023.05	\$2,295.06	0.4	\$2,295.06	\$1,615.00	1.4
Heat Pump Water Heaters Tier 2: any tank size >= 50 gallons - Zonal Electric Heated Home - Interior Location	Revised	Breakdown	\$861.89	\$1,615.00	0.5	\$783.54	\$1,615.00	0.5	\$783.54	\$800.00	1.0	\$783.54	\$1,945.05	0.4	\$1,945.05	\$1,615.00	1.2
Heat Pump Water Heaters Tier 2: any tank size >= 50 gallons - Electric Furnace Heated Home - Interior Location	Revised	Breakdown	\$757.78	\$1,615.00	0.5	\$688.89	\$1,615.00	0.4	\$688.89	\$800.00	0.9	\$688.89	\$1,806.73	0.4	\$1,806.73	\$1,615.00	1.1
Advanced Power Strips - Load Sensing - Owner Install (Retail)	New	Average	\$6.41	\$21.12	0.3	\$5.83	\$21.12	0.3	\$5.83	\$10.00	0.6	\$5.83	\$19.89	0.3	\$24.98	\$21.12	1.2
Advanced Power Strips - Occupancy Sensing - Owner Install (Retail)	New	Average	\$14.96	\$21.12	0.7	\$13.60	\$21.12	0.6	\$13.60	\$32.00	0.4	\$13.60	\$55.08	0.2	\$66.96	\$21.12	3.2
Advanced Power Strips - IR Sensing - Owner Install (Retail)	New	Average	\$64.12	\$66.00	1.0	\$58.29	\$66.00	0.9	\$58.29	\$60.00	1.0	\$58.29	\$158.90	0.4	\$209.84	\$66.00	3.2

Table 18 – Single Family Cost/Benefit Test Results – Weatherization (ALL Sensitivities)

Utah HES Program Measure Level - Weatherization	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
Installed Insulation - Attic - Electric	Current	Average	\$1.85	\$0.84	2.2	\$1.68	\$0.84	2.0	\$1.68	\$0.65	2.6	\$1.68	\$2.80	0.6	\$2.80	\$0.84	3.3
Installed Insulation - Attic - Electric: Electric FAF Heating System	Current	Breakdown	\$1.86	\$0.84	2.2	\$1.69	\$0.84	2.0	\$1.69	\$0.65	2.6	\$1.69	\$2.82	0.6	\$2.82	\$0.84	3.4
Installed Insulation - Attic - Electric: EFAF w/CAC	Current	Breakdown	\$2.14	\$0.84	2.5	\$1.95	\$0.84	2.3	\$1.95	\$0.65	3.0	\$1.95	\$3.14	0.6	\$3.14	\$0.84	3.7
Installed Insulation - Attic - Electric: Heat Pump Heating System	Current	Breakdown	\$1.15	\$0.84	1.4	\$1.05	\$0.84	1.2	\$1.05	\$0.65	1.6	\$1.05	\$1.99	0.5	\$1.99	\$0.84	2.4
Installed Insulation - Attic - Gas Heat w/CAC	Revised	Average	\$0.44	\$0.84	0.5	\$0.40	\$0.84	0.5	\$0.40	\$0.10	4.0	\$0.40	\$0.33	1.2	\$0.33	\$0.84	0.4
Insulation - Attic - Electric - Self Install	Current	Average	\$1.85	\$0.42	4.4	\$1.68	\$0.42	4.0	\$1.68	\$0.40	4.2	\$1.68	\$2.55	0.7	\$2.55	\$0.42	6.1
Insulation - Attic - Electric - Self Install: Electric FAF Heating System	Current	Breakdown	\$1.86	\$0.42	4.4	\$1.69	\$0.42	4.0	\$1.69	\$0.40	4.2	\$1.69	\$2.57	0.7	\$2.57	\$0.42	6.1
Insulation - Attic - Electric - Self Install: EFAF w/CAC	Current	Breakdown	\$2.14	\$0.42	5.1	\$1.95	\$0.42	4.6	\$1.95	\$0.40	4.9	\$1.95	\$2.89	0.7	\$2.89	\$0.42	6.9
Insulation - Attic - Electric - Self Install: Heat Pump Heating System	Current	Breakdown	\$1.15	\$0.42	2.7	\$1.05	\$0.42	2.5	\$1.05	\$0.40	2.6	\$1.05	\$1.74	0.6	\$1.74	\$0.42	4.1
Insulation - Attic - Gas - Self Install	Revised	Average	\$0.44	\$0.42	1.1	\$0.40	\$0.42	1.0	\$0.40	\$0.10	4.0	\$0.40	\$0.33	1.2	\$0.33	\$0.42	0.8
Installed Insulation - Floor - Electric	Current	Average	\$5.02	\$1.37	3.7	\$4.56	\$1.37	3.3	\$4.56	\$0.65	7.0	\$4.56	\$6.49	0.7	\$6.49	\$1.37	4.7
Installed Insulation - Floor - Electric: Electric FAF Heating System	Current	Breakdown	\$5.45	\$1.37	4.0	\$4.96	\$1.37	3.6	\$4.96	\$0.65	7.6	\$4.96	\$6.99	0.7	\$6.99	\$1.37	5.1
Installed Insulation - Floor - Electric: EFAF w/CAC	Current	Breakdown	\$5.44	\$1.37	4.0	\$4.94	\$1.37	3.6	\$4.94	\$0.65	7.6	\$4.94	\$6.97	0.7	\$6.97	\$1.37	5.1
Installed Insulation - Floor - Electric: Heat Pump Heating System	Current	Breakdown	\$2.96	\$1.37	2.2	\$2.69	\$1.37	2.0	\$2.69	\$0.65	4.1	\$2.69	\$4.09	0.7	\$4.09	\$1.37	3.0
Insulation - Floor - Electric - Self Install	Current	Average	\$5.02	\$0.69	7.3	\$4.56	\$0.69	6.7	\$4.56	\$0.25	18.3	\$4.56	\$6.09	0.7	\$6.09	\$0.69	8.9
Insulation - Floor - Electric - Self Install: Electric FAF Heating System	Current	Breakdown	\$5.45	\$0.69	8.0	\$4.96	\$0.69	7.2	\$4.96	\$0.25	19.8	\$4.96	\$6.59	0.8	\$6.59	\$0.69	9.6
Insulation - Floor - Electric - Self Install: EFAF w/CAC	Current	Breakdown	\$5.44	\$0.69	7.9	\$4.94	\$0.69	7.2	\$4.94	\$0.25	19.8	\$4.94	\$6.57	0.8	\$6.57	\$0.69	9.6
Insulation - Floor - Electric - Self Install: Heat Pump Heating System	Current	Breakdown	\$2.96	\$0.69	4.3	\$2.69	\$0.69	3.9	\$2.69	\$0.25	10.7	\$2.69	\$3.69	0.7	\$3.69	\$0.69	5.4
Installed Insulation - Wall - Electric	Current	Average	\$7.21	\$0.97	7.4	\$6.55	\$0.97	6.8	\$6.55	\$0.65	10.1	\$6.55	\$9.03	0.7	\$9.03	\$0.97	9.3
Installed Insulation - Wall - Electric: Electric FAF Heating System	Current	Breakdown	\$7.44	\$0.97	7.7	\$6.76	\$0.97	7.0	\$6.76	\$0.65	10.4	\$6.76	\$9.30	0.7	\$9.30	\$0.97	9.6
Installed Insulation - Wall - Electric: EFAF w/CAC	Current	Breakdown	\$7.96	\$0.97	8.2	\$7.24	\$0.97	7.5	\$7.24	\$0.65	11.1	\$7.24	\$9.91	0.7	\$9.91	\$0.97	10.2
Installed Insulation - Wall - Electric: Heat Pump Heating System	Current	Breakdown	\$4.88	\$0.97	5.0	\$4.44	\$0.97	4.6	\$4.44	\$0.65	6.8	\$4.44	\$6.33	0.7	\$6.33	\$0.97	6.5
Installed Insulation - Wall - Gas	Revised	Average	\$1.57	\$0.97	1.6	\$1.42	\$0.97	1.5	\$1.42	\$0.25	5.7	\$1.42	\$1.07	1.3	\$1.07	\$0.97	1.1
Insulation - Wall - Electric - Self Install	Current	Average	\$7.21	\$0.49	14.9	\$6.55	\$0.49	13.5	\$6.55	\$0.45	14.6	\$6.55	\$8.83	0.7	\$8.83	\$0.49	18.2
Insulation - Wall - Electric - Self Install: Electric FAF Heating System	Current	Breakdown	\$7.44	\$0.49	15.3	\$6.76	\$0.49	13.9	\$6.76	\$0.45	15.0	\$6.76	\$9.10	0.7	\$9.10	\$0.49	18.8
Insulation - Wall - Electric - Self Install: EFAF w/CAC	Current	Breakdown	\$7.96	\$0.49	16.4	\$7.24	\$0.49	14.9	\$7.24	\$0.45	16.1	\$7.24	\$9.71	0.7	\$9.71	\$0.49	20.0
Insulation - Wall - Electric - Self Install: Heat Pump Heating System	Current	Breakdown	\$4.88	\$0.49	10.1	\$4.44	\$0.49	9.1	\$4.44	\$0.45	9.9	\$4.44	\$6.13	0.7	\$6.13	\$0.49	12.6
Insulation - Wall - Gas - Self-Install	Current	Average	\$1.57	\$0.49	3.2	\$1.42	\$0.49	2.9	\$1.42	\$0.20	7.1	\$1.42	\$1.02	1.4	\$1.02	\$0.49	2.1
Windows Tier 1 (U-0.30)	Current	Average	\$3.61	\$0.89	4.1	\$3.28	\$0.89	3.7	\$3.28	\$0.50	6.6	\$3.28	\$2.40	1.4	\$2.40	\$0.89	2.7
Windows Tier 1 (U-0.30): Gas Heat w/CAC	Current	Breakdown	\$3.61	\$0.89	4.1	\$3.28	\$0.89	3.7	\$3.28	\$0.50	6.6	\$3.28	\$2.40	1.4	\$2.40	\$0.89	2.7
Windows Tier 2 (U-0.22)	Current	Average	\$3.71	\$2.25	1.6	\$3.37	\$2.25	1.5	\$3.37	\$1.00	3.4	\$3.37	\$5.32	0.6	\$5.32	\$2.25	2.4
Windows Tier 2 (U-0.22): Electric FAF Heating System	Current	Breakdown	\$2.97	\$2.25	1.3	\$2.70	\$2.25	1.2	\$2.70	\$2.00	1.4	\$2.70	\$5.46	0.5	\$5.46	\$2.25	2.4
Windows Tier 2 (U-0.22): EFAF w/CAC	Current	Breakdown	\$4.60	\$2.25	2.0	\$4.19	\$2.25	1.9	\$4.19	\$2.00	2.1	\$4.19	\$7.35	0.6	\$7.35	\$2.25	3.3
Windows Tier 2 (U-0.22): Heat Pump Heating System	Current	Breakdown	\$3.39	\$2.25	1.5	\$3.08	\$2.25	1.4	\$3.08	\$2.00	1.5	\$3.08	\$5.94	0.5	\$5.94	\$2.25	2.6
Windows Tier 2 (U-0.22): Gas Heat w/CAC	Current	Breakdown	\$3.78	\$2.25	1.7	\$3.44	\$2.25	1.5	\$3.44	\$1.00	3.4	\$3.44	\$2.99	1.1	\$2.99	\$2.25	1.3
Air Sealing	New	Average	\$0.82	\$0.24	3.4	\$0.74	\$0.24	3.1	\$0.74	\$0.20	3.7	\$0.74	\$1.15	0.6	\$1.15	\$0.24	4.8
Air Sealing - Infiltration Reduction: Electric FAF Heating System	New	Breakdown	\$0.89	\$0.24	3.7	\$0.81	\$0.24	3.4	\$0.81	\$0.20	4.1	\$0.81	\$1.24	0.7	\$1.24	\$0.24	5.2
Air Sealing - Infiltration Reduction: EFAF w/CAC	New	Breakdown	\$0.89	\$0.24	3.7	\$0.81	\$0.24	3.4	\$0.81	\$0.20	4.1	\$0.81	\$1.24	0.7	\$1.24	\$0.24	5.2
Air Sealing - Infiltration Reduction: Heat Pump Heating System	New	Breakdown	\$0.43	\$0.24	1.8	\$0.39	\$0.24	1.6	\$0.39	\$0.20	2.0	\$0.39	\$0.70	0.6	\$0.70	\$0.24	2.9

Table 19 – Single Family Cost/Benefit Test Results – Lighting/HVAC (ALL Sensitivities)

Utah HES Program Measure Level - Lighting/HVAC	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
CFLs - General Purpose - Retail	Revised	Average	\$5.09	\$2.02	2.5	\$4.63	\$2.02	2.3	\$4.63	\$1.21	3.8	\$4.63	\$8.42	0.5	\$11.08	\$2.02	5.5
CFLs - General Purpose - Mail by Request	Revised	Average	\$4.47	\$1.00	4.5	\$4.06	\$1.00	4.1	\$4.06	\$1.37	3.0	\$4.06	\$7.70	0.5	\$10.05	\$1.00	10.0
CFLs - General Purpose - Direct Install	Revised	Average	\$7.18	\$2.69	2.7	\$6.53	\$2.69	2.4	\$6.53	\$3.69	1.8	\$6.53	\$13.87	0.5	\$17.63	\$2.69	6.5
CFLs - Specialty - Retail	Revised	Average	\$6.60	\$4.26	1.6	\$6.00	\$4.26	1.4	\$6.00	\$1.91	3.1	\$6.00	\$11.26	0.5	\$14.72	\$4.26	3.5
CFLs - Specialty - Mail by Request	Revised	Average	\$6.60	\$3.20	2.1	\$6.00	\$3.20	1.9	\$6.00	\$4.38	1.4	\$6.00	\$13.73	0.4	\$17.19	\$3.20	5.4
CFLs - Specialty - Direct Install	Revised	Average	\$9.32	\$4.17	2.2	\$8.47	\$4.17	2.0	\$8.47	\$5.71	1.5	\$8.47	\$18.92	0.4	\$23.80	\$4.17	5.7
LEDs - General Purpose - Retail	Revised	Average	\$14.03	\$9.15	1.5	\$12.75	\$9.15	1.4	\$12.75	\$6.44	2.0	\$12.75	\$24.97	0.5	\$31.82	\$9.15	3.5
LEDs - General Purpose - Mail by Request	Revised	Average	\$14.99	\$7.06	2.1	\$13.62	\$7.06	1.9	\$13.62	\$9.67	1.4	\$13.62	\$29.46	0.5	\$36.78	\$7.06	5.2
LEDs - General Purpose - Direct Install	Revised	Average	\$13.47	\$11.90	1.1	\$12.24	\$11.90	1.0	\$12.24	\$16.30	0.8	\$12.24	\$34.08	0.4	\$40.66	\$11.90	3.4
LEDs - Specialty - Retail	Revised	Average	\$20.97	\$11.75	1.8	\$19.06	\$11.75	1.6	\$19.06	\$5.76	3.3	\$19.06	\$33.45	0.6	\$43.69	\$11.75	3.7
LEDs - Specialty - Mail by Request	Revised	Average	\$20.12	\$21.56	0.9	\$18.29	\$21.56	0.8	\$18.29	\$29.53	0.6	\$18.29	\$56.11	0.3	\$65.94	\$21.56	3.1
LEDs - Specialty - Direct Install	Revised	Average	\$20.12	\$16.83	1.2	\$18.29	\$16.83	1.1	\$18.29	\$23.05	0.8	\$18.29	\$49.63	0.4	\$59.46	\$16.83	3.5
Evaporative Cooling—Replacement	Revised	Average	\$2,105.86	-\$1,434.18	NA	\$1,914.42	-\$1,434.18	NA	\$1,914.42	\$500.00	3.8	\$1,914.42	\$1,616.13	1.2	\$2,191.11	-\$1,434.18	NA
Evaporative Cooling—New	Revised	Average	\$2,393.03	-\$1,629.75	NA	\$2,175.48	-\$1,629.75	NA	\$2,175.48	\$500.00	4.4	\$2,175.48	\$1,768.33	1.2	\$2,191.11	-\$1,629.75	NA
Evaporative Cooling—Premium Only	Revised	Average	\$2,520.65	-\$1,287.70	NA	\$2,291.50	-\$1,287.70	NA	\$2,291.50	\$650.00	3.5	\$2,291.50	\$1,985.98	1.2	\$2,341.11	-\$1,287.70	NA
Evaporative Cooling—Premium Whole-House Ducted	Revised	Average	\$2,712.10	-\$1,385.50	NA	\$2,465.54	-\$1,385.50	NA	\$2,465.54	\$1,300.00	1.9	\$2,465.54	\$2,737.45	0.9	\$2,991.11	-\$1,385.50	NA
Evaporative Cooling—Replacement— Self Install	Revised	Average	\$2,105.86	-\$1,434.18	NA	\$1,914.42	-\$1,434.18	NA	\$1,914.42	\$400.00	4.8	\$1,914.42	\$1,516.13	1.3	\$2,091.11	-\$1,434.18	NA
Evaporative Cooling—New – Self Install	Revised	Average	\$2,393.03	-\$1,629.75	NA	\$2,175.48	-\$1,629.75	NA	\$2,175.48	\$400.00	5.4	\$2,175.48	\$1,668.33	1.3	\$2,091.11	-\$1,629.75	NA
Evaporative Cooling—Premium Only – Self Install	Revised	Average	\$2,520.65	-\$1,287.70	NA	\$2,291.50	-\$1,287.70	NA	\$2,291.50	\$500.00	4.6	\$2,291.50	\$1,835.98	1.2	\$2,191.11	-\$1,287.70	NA
Evaporative Cooling—Premium Whole-House Ducted—Self Install	Revised	Average	\$2,712.10	-\$1,385.50	NA	\$2,465.54	-\$1,385.50	NA	\$2,465.54	\$1,000.00	2.5	\$2,465.54	\$2,437.45	1.0	\$2,691.11	-\$1,385.50	NA
Tier 1 Central Air Conditioning—15+SEER/12.5 EER	Current	Average	\$472.05	\$279.38	1.7	\$429.13	\$279.38	1.5	\$429.13	\$125.00	3.4	\$429.13	\$375.19	1.1	\$535.15	\$279.38	1.9
Tier 2 Central Air Conditioning—17+ SEER	New	Average	\$733.68	\$1,263.92	0.6	\$666.98	\$1,263.92	0.5	\$666.98	\$200.00	3.3	\$666.98	\$588.86	1.1	\$837.47	\$1,263.92	0.7
Tier 3 Central Air Conditioning— 20+ SEER	New	Average	\$1,027.15	\$2,135.00	0.5	\$933.77	\$2,135.00	0.4	\$933.77	\$400.00	2.3	\$933.77	\$944.40	1.0	\$1,292.46	\$2,135.00	0.6
CAC Best Practice Installation and Proper Sizing	Revised	Average	\$320.76	\$0.00	NA	\$291.60	\$0.00	NA	\$291.60	\$150.00	1.9	\$291.60	\$323.75	0.9	\$434.83	\$0.00	NA
Heat Pump Install - Tier 1 (Conversion)	New	Average	\$5,646.99	\$2,064.85	2.7	\$5,133.62	\$2,064.85	2.5	\$5,133.62	\$250.00	20.5	\$5,133.62	\$7,039.64	0.7	\$11,380.55	\$2,064.85	5.5
Heat Pump Install - Tier 2 (Conversion)	New	average	\$5,910.60	\$2,523.57	2.3	\$5,373.27	\$2,523.57	2.1	\$5,373.27	\$600.00	9.0	\$5,373.27	\$7,706.59	0.7	\$12,250.15	\$2,523.57	4.9
Heat Pump Install - Tier 1 (Upgrade)	New	Average	\$483.91	\$378.20	1.3	\$439.91	\$378.20	1.2	\$439.91	\$250.00	1.8	\$439.91	\$831.82	0.5	\$1,203.81	\$378.20	3.2
Heat Pump Install - Tier2 (Upgrade)	New	Average	\$747.52	\$836.92	0.9	\$679.56	\$836.92	0.8	\$679.56	\$600.00	1.1	\$679.56	\$1,498.78	0.5	\$2,073.41	\$836.92	2.5
Ductless Heat Pumps- Supplemental (Bonus Room)	New	Average	\$576.66	\$1,705.56	0.3	\$524.24	\$1,705.56	0.3	\$524.24	\$500.00	1.0	\$524.24	\$1,193.34	0.4	\$1,636.63	\$1,705.56	1.0
Ductless Heat Pumps- Single Zone	New	Average	\$1,723.26	\$2,155.33	0.8	\$1,566.60	\$2,155.33	0.7	\$1,566.60	\$1,300.00	1.2	\$1,566.60	\$3,371.96	0.5	\$4,696.66	\$2,155.33	2.2
Ductless Heat Pumps- Multizone	New	Average	\$3,450.19	\$3,770.26	0.9	\$3,136.54	\$3,770.26	0.8	\$3,136.54	\$1,800.00	1.7	\$3,136.54	\$5,948.33	0.5	\$8,600.53	\$3,770.26	2.3
Duct Sealing & Insulation - Electric	Revised	Average	\$2,669.87	\$719.12	3.7	\$2,427.15	\$719.12	3.4	\$2,427.15	\$800.00	3.0	\$2,427.15	\$3,972.94	0.6	\$4,365.10	\$719.12	6.1
Duct Sealing & Insulation - Electric: Electric FAF Heating System	Revised	Breakdown	\$2,518.17	\$719.12	3.5	\$2,289.25	\$719.12	3.2	\$2,289.25	\$800.00	2.9	\$2,289.25	\$3,792.66	0.6	\$4,162.54	\$719.12	5.8
Duct Sealing & Insulation - Electric: EFAF w/CAC	Revised	Breakdown	\$2,879.00	\$719.12	4.0	\$2,617.27	\$719.12	3.6	\$2,617.27	\$800.00	3.3	\$2,617.27	\$4,221.47	0.6	\$4,644.35	\$719.12	6.5
Duct Sealing & Insulation - Electric: Heat Pump Heating System	Revised	Breakdown	\$2,532.26	\$719.12	3.5	\$2,302.05	\$719.12	3.2	\$2,302.05	\$800.00	2.9	\$2,302.05	\$3,809.40	0.6	\$4,181.35	\$719.12	5.8
Duct Sealing & Insulation- Gas Heating w/CAC	Revised	Average	\$686.39	\$719.12	1.0	\$623.99	\$719.12	0.9	\$623.99	\$120.00	5.2	\$623.99	\$485.71	1.3	\$530.91	\$719.12	0.7
Duct Sealing Only - Pre-Insulated Ducts - Electric Heating	Revised	Average	\$1,199.49	\$478.82	2.5	\$1,090.45	\$478.82	2.3	\$1,090.45	\$400.00	2.7	\$1,090.45	\$1,825.51	0.6	\$2,001.69	\$478.82	4.2
Duct Sealing Only - Pre-Insulated Ducts - Electric Heating: Electric FAF Heating System	Revised	Breakdown	\$1,138.81	\$478.82	2.4	\$1,035.28	\$478.82	2.2	\$1,035.28	\$400.00	2.6	\$1,035.28	\$1,753.39	0.6	\$1,920.67	\$478.82	4.0
Duct Sealing Only - Pre-Insulated Ducts - Electric Heating: EFAF w/CAC	Revised	Breakdown	\$1,302.43	\$478.82	2.7	\$1,184.03	\$478.82	2.5	\$1,184.03	\$400.00	3.0	\$1,184.03	\$1,947.84	0.6	\$2,139.14	\$478.82	4.5
Duct Sealing Only - Pre-Insulated Ducts - Electric Heating: Heat Pump Heating System	Revised	Breakdown	\$1,096.55	\$478.82	2.3	\$996.87	\$478.82	2.1	\$996.87	\$400.00	2.5	\$996.87	\$1,703.17	0.6	\$1,864.24	\$478.82	3.9
95% Gas Furnace w/ECM Blower	Current	Average	\$527.12	\$356.00	1.5	\$479.20	\$356.00	1.3	\$479.20	\$250.00	1.9	\$479.20	\$881.25	0.5	\$959.27	\$356.00	2.7
ECM on Existing Furnace	New	Average	\$314.46	\$356.00	0.9	\$285.87	\$356.00	0.8	\$285.87	\$150.00	1.9	\$285.87	\$526.58	0.5	\$573.12	\$356.00	1.6

Table 20 – Single Family Cost/Benefit Test Results – Plumbing/Whole House (ALL Sensitivities)

Utah HES Program Measure Level - Plumbing/Whole House	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
Low Flow Showerheads - Mail By Request - Electric Only	New	Average	\$133.37	\$7.20	18.5	\$121.25	\$7.20	16.8	\$121.25	\$9.00	13.5	\$121.25	\$194.72	0.6	\$241.15	\$7.20	33.5
Low Flow Showerheads - Mail By Request - Electric Only: 2.00 gpm	New	Breakdown	\$60.02	\$7.20	8.3	\$54.56	\$7.20	7.6	\$54.56	\$9.00	6.1	\$54.56	\$92.57	0.6	\$113.47	\$7.20	15.8
Low Flow Showerheads - Mail By Request - Electric Only: 1.75 gpm	New	Breakdown	\$95.93	\$7.20	13.3	\$87.20	\$7.20	12.1	\$87.20	\$9.00	9.7	\$87.20	\$142.58	0.6	\$175.97	\$7.20	24.4
Low Flow Showerheads - Mail By Request - Electric Only: 1.50 gpm	New	Breakdown	\$133.37	\$7.20	18.5	\$121.25	\$7.20	16.8	\$121.25	\$9.00	13.5	\$121.25	\$194.72	0.6	\$241.15	\$7.20	33.5
Low Flow Showerheads - Direct Install - Electric Only	New	Average	\$157.48	\$24.80	6.4	\$143.17	\$24.80	5.8	\$143.17	\$31.00	4.6	\$143.17	\$250.29	0.6	\$305.12	\$24.80	12.3
Low Flow Showerheads - Direct Install - Electric Only: 2.00 gpm	New	Breakdown	\$71.30	\$24.80	2.9	\$64.82	\$24.80	2.6	\$64.82	\$31.00	2.1	\$64.82	\$130.29	0.5	\$155.11	\$24.80	6.3
Low Flow Showerheads - Direct Install - Electric Only: 1.75 gpm	New	Breakdown	\$113.88	\$24.80	4.6	\$103.53	\$24.80	4.2	\$103.53	\$31.00	3.3	\$103.53	\$189.58	0.5	\$229.22	\$24.80	9.2
Low Flow Showerheads - Direct Install - Electric Only: 1.50 gpm	New	Breakdown	\$157.48	\$24.80	6.4	\$143.17	\$24.80	5.8	\$143.17	\$31.00	4.6	\$143.17	\$250.29	0.6	\$305.12	\$24.80	12.3
Low Flow Aerators - Mail By Request - Electric Only	New	Average	\$24.55	\$0.94	26.2	\$22.32	\$0.94	23.8	\$22.32	\$1.17	19.1	\$22.32	\$35.36	0.6	\$43.90	\$0.94	46.9
Low Flow Aerators - Mail By Request - Electric Only: 1.5 GPM	New	Breakdown	\$13.22	\$1.68	7.9	\$12.02	\$1.68	7.2	\$12.02	\$2.10	5.7	\$12.02	\$20.51	0.6	\$25.11	\$1.68	14.9
Low Flow Aerators - Mail By Request - Electric Only: 0.5 GPM	New	Breakdown	\$32.11	\$0.44	73.0	\$29.19	\$0.44	66.3	\$29.19	\$0.55	53.1	\$29.19	\$45.26	0.6	\$56.44	\$0.44	128.3
Low Flow Aerators - Direct Install - Electric Only	New	Average	\$26.84	\$4.00	6.7	\$24.40	\$4.00	6.1	\$24.40	\$5.00	4.9	\$24.40	\$42.37	0.6	\$51.72	\$4.00	12.9
Low Flow Aerators - Direct Install - Electric Only: 1.5 GPM	New	Breakdown	\$15.66	\$4.00	3.9	\$14.23	\$4.00	3.6	\$14.23	\$5.00	2.8	\$14.23	\$26.80	0.5	\$32.25	\$4.00	8.1
Low Flow Aerators - Direct Install - Electric Only: 0.5 GPM	New	Breakdown	\$38.02	\$4.00	9.5	\$34.56	\$4.00	8.6	\$34.56	\$5.00	6.9	\$34.56	\$57.95	0.6	\$71.18	\$4.00	17.8
Thermostatic Valve - Direct Install - Electric Only	New	Average	\$18.51	\$24.00	0.8	\$16.83	\$24.00	0.7	\$16.83	\$30.00	0.6	\$16.83	\$55.77	0.3	\$62.22	\$24.00	2.6
LFS 1.5gpm +ThV - Direct Install - Electric Only	New	Average	\$175.95	\$43.20	4.1	\$159.95	\$43.20	3.7	\$159.95	\$54.00	3.0	\$159.95	\$299.01	0.5	\$360.26	\$43.20	8.3
High Efficiency Pool Pumps	New	Average	\$759.13	\$707.72	1.1	\$690.12	\$707.72	1.0	\$690.12	\$500.00	1.4	\$690.12	\$1,449.32	0.5	\$1,686.66	\$707.72	2.4
Salt Lake Co. High Efficiency Pool Pump	New	Breakdown	\$801.40	\$707.72	1.1	\$728.54	\$707.72	1.0	\$728.54	\$500.00	1.5	\$728.54	\$1,502.18	0.5	\$1,752.73	\$707.72	2.5
Washington Co. High Efficiency Pool Pump	New	Breakdown	\$1,068.72	\$707.72	1.5	\$971.56	\$707.72	1.4	\$971.56	\$500.00	1.9	\$971.56	\$1,836.48	0.5	\$2,170.60	\$707.72	3.1
Utah Co. High Efficiency Pool Pump	New	Breakdown	\$683.16	\$707.72	1.0	\$621.05	\$707.72	0.9	\$621.05	\$500.00	1.2	\$621.05	\$1,354.32	0.5	\$1,567.90	\$707.72	2.2
Davis Co. High Efficiency Pool Pump	New	Breakdown	\$623.75	\$707.72	0.9	\$567.05	\$707.72	0.8	\$567.05	\$500.00	1.1	\$567.05	\$1,280.03	0.4	\$1,475.04	\$707.72	2.1
Summit Co. High Efficiency Pool Pump	New	Breakdown	\$356.43	\$707.72	0.5	\$324.03	\$707.72	0.5	\$324.03	\$500.00	0.6	\$324.03	\$945.73	0.3	\$1,057.17	\$707.72	1.5
Weber Co. High Efficiency Pool Pump	New	Breakdown	\$712.86	\$707.72	1.0	\$648.06	\$707.72	0.9	\$648.06	\$500.00	1.3	\$648.06	\$1,391.46	0.5	\$1,614.33	\$707.72	2.3
Cache Co. High Efficiency Pool Pump	New	Breakdown	\$594.05	\$707.72	0.8	\$540.05	\$707.72	0.8	\$540.05	\$500.00	1.1	\$540.05	\$1,242.89	0.4	\$1,428.61	\$707.72	2.0
Morgan Co. High Efficiency Pool Pump	New	Breakdown	\$579.20	\$707.72	0.8	\$526.55	\$707.72	0.7	\$526.55	\$500.00	1.1	\$526.55	\$1,224.32	0.4	\$1,405.39	\$707.72	2.0
Box Elder Co. High Efficiency Pool Pump	New	Breakdown	\$801.40	\$707.72	1.1	\$728.54	\$707.72	1.0	\$728.54	\$500.00	1.5	\$728.54	\$1,502.18	0.5	\$1,752.73	\$707.72	2.5
Wasatch Co. High Efficiency Pool Pump	New	Breakdown	\$475.24	\$707.72	0.7	\$432.04	\$707.72	0.6	\$432.04	\$500.00	0.9	\$432.04	\$1,094.31	0.4	\$1,242.89	\$707.72	1.8
Iron Co. High Efficiency Pool Pump	New	Breakdown	\$683.16	\$707.72	1.0	\$621.05	\$707.72	0.9	\$621.05	\$500.00	1.2	\$621.05	\$1,354.32	0.5	\$1,567.90	\$707.72	2.2
Tooele Co. High Efficiency Pool Pump	New	Breakdown	\$753.99	\$707.72	1.1	\$685.44	\$707.72	1.0	\$685.44	\$500.00	1.4	\$685.44	\$1,442.90	0.5	\$1,678.62	\$707.72	2.4
Whole Home Upgrade Package- Ductless Heat Pump	New	average	\$4,034.70	\$4,105.85	1.0	\$3,667.91	\$4,105.85	0.9	\$3,667.91	\$3,150.00	1.2	\$3,667.91	\$7,962.26	0.5	\$8,557.03	\$4,105.85	2.1
Whole Home Upgrade Package- Heat Pump Conversion	New	Average	\$13,210.39	\$4,692.97	2.8	\$12,009.44	\$4,692.97	2.6	\$12,009.44	\$2,900.00	4.1	\$12,009.44	\$18,656.25	0.6	\$20,603.65	\$4,692.97	4.4
Whole Home Upgrade Package- Heat Pump upgrade	New	Average	\$4,354.97	\$2,232.12	2.0	\$3,959.06	\$2,232.12	1.8	\$3,959.06	\$2,900.00	1.4	\$3,959.06	\$8,094.24	0.5	\$8,736.23	\$2,232.12	3.9
Whole Home Upgrade Package- Gas Heat	New	Average	\$5,477.80	\$585.62	9.4	\$4,979.82	\$585.62	8.5	\$4,979.82	\$2,270.00	2.2	\$4,979.82	\$5,194.81	1.0	\$5,556.30	\$585.62	9.5
Whole Home Upgrade Package- Gas Heat	New	Average	\$4,173.23	\$3,880.40	1.1	\$3,793.84	\$3,880.40	1.0	\$3,793.84	\$1,320.00	2.9	\$3,793.84	\$3,548.24	1.1	\$3,823.65	\$3,880.40	1.0
Whole Home Upgrade Package- Gas Heat	New	Average	\$4,668.87	\$5,151.32	0.9	\$4,244.43	\$5,151.32	0.8	\$4,244.43	\$1,520.00	2.8	\$4,244.43	\$4,012.89	1.1	\$4,321.00	\$5,151.32	0.8

Table 21 – Multi-Family Cost/Benefit Test Results (ALL Sensitivities)

Utah HES Program Measure Level	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
Low Flow Showerheads - Direct Install - Electric Only	New	Average	\$77.46	\$24.80	3.1	\$70.42	\$24.80	2.8	\$70.42	\$31.00	2.3	\$70.42	\$138.86	0.5	\$165.83	\$24.80	6.7
LFS - 2.00 gpm	New	Breakdown	\$54.37	\$24.80	2.2	\$49.43	\$24.80	2.0	\$49.43	\$31.00	1.6	\$49.43	\$106.72	0.5	\$125.65	\$24.80	5.1
LFS - 1.75 gpm	New	Breakdown	\$86.69	\$24.80	3.5	\$78.81	\$24.80	3.2	\$78.81	\$31.00	2.5	\$78.81	\$151.72	0.5	\$181.90	\$24.80	7.3
LFS - 1.50 gpm	New	Breakdown	\$120.55	\$24.80	4.9	\$109.59	\$24.80	4.4	\$109.59	\$31.00	3.5	\$109.59	\$198.86	0.6	\$240.83	\$24.80	9.7
Thermostatic Valve - Direct Install - Electric Only	New	Average	\$20.56	\$24.00	0.9	\$18.69	\$24.00	0.8	\$18.69	\$30.00	0.6	\$18.69	\$58.63	0.3	\$65.79	\$24.00	2.7
LFS 1.5gpm +ThV - Direct Install - Electric Only	New	Average	\$141.07	\$43.20	3.3	\$128.24	\$43.20	3.0	\$128.24	\$54.00	2.4	\$128.24	\$250.44	0.5	\$299.55	\$43.20	6.9
Air Sealing	New	Average	\$0.65	\$0.24	2.7	\$0.59	\$0.24	2.5	\$0.59	\$0.20	2.9	\$0.59	\$1.02	0.6	\$1.02	\$0.24	4.3
Electric FAF Heating System	New	Breakdown	\$0.72	\$0.24	3.0	\$0.65	\$0.24	2.7	\$0.65	\$0.20	3.3	\$0.65	\$1.11	0.6	\$1.11	\$0.24	4.6
EFAF w/CAC	New	Breakdown	\$0.65	\$0.24	2.7	\$0.59	\$0.24	2.5	\$0.59	\$0.20	2.9	\$0.59	\$1.02	0.6	\$1.02	\$0.24	4.3
Heat Pump Heating System	New	Breakdown	\$0.48	\$0.24	2.0	\$0.44	\$0.24	1.8	\$0.44	\$0.20	2.2	\$0.44	\$0.81	0.5	\$0.81	\$0.24	3.4

Table 22 – Manufactured Homes Cost/Benefit Test Results (ALL Sensitivities)

Utah HES Program Measure Level	Status	Average or Breakdown	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Part. PV Benefits (\$)	Part. PV Cost (\$)	Part. Cost Test
Manufactured Homes Duct Sealing - Any Electric Heating System	New	Average	\$1,555.15	\$667.50	2.3	\$1,413.77	\$667.50	2.1	\$1,413.77	\$750.00	1.9	\$1,413.77	\$2,612.38	0.5	\$2,842.56	\$667.50	4.3
Manufactured Homes Duct Sealing - Electric Cooling	New	Average	\$489.37	\$178.00	2.7	\$444.88	\$178.00	2.5	\$444.88	\$200.00	2.2	\$444.88	\$461.92	1.0	\$494.29	\$178.00	2.8
Manufactured Homes Ductless Heat Pumps	New	Average	\$3,392.60	\$3,144.65	1.1	\$3,084.18	\$3,144.65	1.0	\$3,084.18	\$1,300.00	2.4	\$3,084.18	\$5,331.85	0.6	\$5,830.17	\$3,144.65	1.9
Manufactured Homes Heat Pump Conversion	New	Average	\$4,302.78	\$3,012.65	1.4	\$3,911.62	\$3,012.65	1.3	\$3,911.62	\$250.00	15.6	\$3,911.62	\$5,363.53	0.7	\$5,995.54	\$3,012.65	2.0
Manufactured Homes Heat Pump Upgrade	New	Average	\$527.69	\$1,442.74	0.4	\$479.72	\$1,442.74	0.3	\$479.72	\$250.00	1.9	\$479.72	\$877.12	0.5	\$954.63	\$1,442.74	0.7
New Manufactured Home Energy Star (with Electric FAF)	New	Average	\$6,195.62	\$1,101.60	5.6	\$5,632.38	\$1,101.60	5.1	\$5,632.38	\$1,000.00	5.6	\$5,632.38	\$8,251.48	0.7	\$10,064.35	\$1,101.60	9.1
New Manufactured Home Energy Star (with Heat Pump)	New	Average	\$3,464.15	\$1,101.60	3.1	\$3,149.23	\$1,101.60	2.9	\$3,149.23	\$1,000.00	3.1	\$3,149.23	\$5,081.01	0.6	\$6,101.27	\$1,101.60	5.5
New Manufactured Home Energy Star (with Gas Furnace)	New	Average	\$1,120.85	\$1,101.60	1.0	\$1,018.96	\$1,101.60	0.9	\$1,018.96	\$500.00	2.0	\$1,018.96	\$1,123.04	0.9	\$1,278.80	\$1,101.60	1.2